Applicants have the following comments on Noro. Claims 1, 2, 8, 11, and 15 of the present invention are different from Noro in the following points:

A. Noro does not positively feedback the amplitude of the diaphragm (claims 1 and 8)

The basic idea of Noro resides in the negative impedance circuit shown in Fig. 2. In this circuit, the signal proportional to the current flowing through the load (speaker) is positively fed back to the driving circuit. As a result, the resonance can be damped, while obtaining the driving force. As regards the outline of the operation, see the Figures in the attached Appendix.

Noro proposed the feedback circuit shown Fig. 1 in order to improve the stability of the basic circuit of Fig. 1. The feedback circuit shown in Fig. 1 is further provided with equivalent impedance means 4, comparison means 5, and feedback gain control means 6.

The feedback loop itself in Fig. 1 is implemented in a manner that the feedback gain control means 6 is inserted in the feedback loop of Fig. 2. The feedback gain control means 6 is a means for controlling the feedback gain (Noro, column 3, line 41-51). Therefore, the idea of "current positive feedback" represented in Fig. 2 is not altered. This idea is fundamentally different from the idea (amplitude positive feedback) adopted in the present invention.

B. The integrating circuit used in the feedback circuit of Noro does not serve to integrate the velocity of the diaphragm (claims 2, 11, and 15).

Noro shows a differential amplifier and integrating circuit in Fig. 4 as the details of the comparison circuit 5. The aim of this block is to detect the difference between the equivalent

circuit and the impedance of an actual load and remove the distortion component thereof. The inputs e_0 and e_s are

e_0: value proportional to the current flowing through the equivalent impedance circuit 4,

e_s,: value proportional to the current flowing through the actual impedance (Noro, Figs. 2(a), (b), Figs. 3(a), (b) and column 4 lines 45-68).

The difference between the inputs e_0 and e_s corresponds to the difference between the respective currents, i.e., impedances. The integrating circuit is used to remove an abrupt change in the waveform (Noro, column 5, lines 11-21).

Therefore, the integrating circuit used in the feedback circuit of Noro does not serve to integrate the velocity of the diaphragm. The differential amplifier and the integrating circuit themselves, which are widely adopted in a general circuit, basically serve to provide a computing function.

Therefore, the construction of only combining these circuits does not realize a specific function, such as "producing an amplitude."

From the above items a. and b., it should be understood that Noro is quite different from the idea of "to positively feedback the amplitude of the diaphragm" of the present invention.

With the foregoing comments in mind, Applicants submit the following additional comments in traversal of the rejections.

Claim 1 is rejected based on Noro and Matsuda.

The circuit shown in Fig. 1 of Noro is a circuit for positively feeding back the value proportional to the current flowing through the load, but does not serve to feed back the

amplitude 4 the diaphragm. The object and function thereof have been described above. However, modifying Noro by Matsuda (i.e., to positively feedback the amplitude of the diaphragm) results in a different operation from that of Noro. Namely, since the amplitude of the speaker is maximum in the range lower than the lowest resonance function, to positively feed back the amplitude implies not to damp the resonance. This will change the operation of Noro in a manner that is contrary to the express teachings of Noro.

Further, Matsuda mainly describes the position where the detecting means is attached. The means for detecting the amplitude is shown as an example. However, Matsuda is silent on the details of the method of feedback.

Therefore, combining Noro and Matsuda does not render claim 1 obvious.

Claim 2 is rejected based on the Noro-Matsuda combination in view of Yokoyama.

In the description (Yokoyama, column 15, lines 31-37, 56-63) referred to by the Examiner, Yokoyama describes a method for detecting the diaphragm velocity, acceleration and displacement and feeding them back singly or in combination. Figs. 8 and 9 are given for explanation. However, both are directed to negative feedback, rather than positive feedback.

Further, as described above, the circuit shown in Fig. 4 of Noro does not integrate the velocity of the diaphragm, and hence does not provide the amplitude of the diaphragm. For at least this reason, combining Yokoyama with Noro-Matsuda does not render claim 2 obvious.

Claims 8, 11, 13, 15, and 17 are rejected over Noro in view of Matsuda.

As described above, Noro is not an invention which positively feeds back the amplitude. The signal representative of the amplitude of the diaphragm does not appear at any position of the

circuit of Noro. Furthermore, Noro and Matsuda do not teach the low pass filter of the present invention. Therefore, claims 8, 11, 13, 15, and 17 are believed to be allowable over the combination of Noro and Matsuda.

Claim 1 is rejected over Hayase in view of Matsuda.

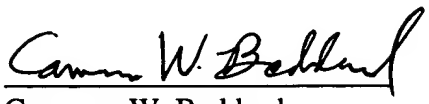
Applicants respectfully submit that there is no motivation to combine the teachings of the references. Hayase discloses a diaphragm of a speaker unit 2 whose vibrations cause a passive radiator 3 (see FIG. 1) to vibrate. Col. 4, lines 33-36. The vibrations of the passive radiator 3 are detected and the detecting current is fed back to an amplifier 5. On the contrary, Matsuda discloses a system in which a detector element detects motion of a diaphragm. Col. 3, lines 31-33. In other words, Hayase's system operates by detecting vibrations of a passive radiator, while Matsuda's system operates by detecting motion of a diaphragm. Hence, modifying Hayase to detect motion of a diphragm, as taught by Matsuda, would change the principle of operation of Hayase. Therefore, Applicants submit that since modifying Hayase by Matsuda would change the principle of operation of Hayase in a manner that contradicts the teachings of both references, there is no motivation or suggestion to combine the references.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue

Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Cameron W. Beddard
Registration No. 46,545

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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